



Michael Ward

Michael Ward
University of Washington

"Examining Latent Geographies of Network Interdependencies in International Commerce"

**Thursday, February 16, 2006
12:00 p.m.
Mershon Center
Room 120**



The contemporary reliance on international trade, which is steadily rising, means that states are increasingly dependent on foreign goods and profits, said Michael Ward. But, the growth of international commerce vastly outweighs that of productivity, meaning that we don't understand international trade as a whole. Ward used cartograms which graphically illustrate this trend: Africa is virtually invisible because of lagging exports and imports while the US and China dominate.

The US and China combined generate more than 25 percent of the world's total exports, and virtually control the international trade scene. The only way to equalize these trends, Ward argues, is by getting rid of trade barriers, which would decrease poverty, particularly in the trade-deprived African states, and increase economic growth on a global scale. The world of international trade is an enormous network of interrelated countries that, in the end, are all dependent on one another for economic survival.

In his work on international commerce, Ward relies on gravity models, pooled data, predictive performance of major covariates and dependencies, and persistence of latent geographies. The gravity model looks at the economic mass of a given country. This model shows that the significance of these masses will ultimately increase trade through relationships. Despite the apparent networks this model presents, Ward said it is not a good descriptor because it does not take into account variables like culture, language, economy, conflict, etc. which all play into inter-state relations and commerce.

The residual effects of international commerce, on the exporter and receiver or importer as Ward displays them, are presented through a fixed effect model which is designed to separate and attribute trade values to outliers. There are also latent dependencies which depict similarities between countries in regards to trade patterns. If a country trades with one kind of economy for a particular good or product, the other economies with which it is involved will likely be similar in strength, or even weakness. This is not always foolproof, however, as it can be difficult, although attemptable, to control for such issues as level of conflict or regime change, two issues which would have significant affects on trade relations, explained Ward.

Pooled data also provides analysis of international trade statistics. In this case Ward focuses on the polity of importers and exporters, and interaction therein, as well as such variables as GDP, distance and cooperation. When graphed, these statistics show how trade has evolved in the last two decades, and forecast 1000 years of trade to come. In the last two decades the aforementioned variables of polity, distance and cooperation have grown increasingly connected, likely through improved modes of communication and urbanization.

When looking at Ward's graphs of latent space over time, in this case over the last two decades, you can see some movement and shifting among imports and exports over the years. However, most of the clustering between 1981 and 2000 has remained the same. The strongest trade ties have changed little, such as America's trade relations with Canada. These latent dependencies, however, under-predict trade in Europe. Overall, latent relationships prove to be more important than covariance, especially for higher-order dependencies.

As good as trade can be for some economies, it still hinders the world economy, as can be seen with Africa's virtual invisibility on the import/export spectrum. Geography is simply unable to capture existing higher-order dependencies. All of these statistics, Ward argues, show that we predict trade flows poorly. Even after modeling, trade is clustered and highly dependent. Adding covariation has its limits and there is a need to think about this issue as a dyadic structure of interdependencies and unearth those interdependencies. The standard gravity model needs help more than it needs new covariance, he concluded.

Mike Ward is professor of Political Science at the University of Washington where he is an affiliate of the Center for Statistics and Social Sciences. His primary interests are in international relations (spanning democratization, globalization, international commerce, military spending, as well as international conflict and cooperation), political geography, as well as mathematical and statistical methods. He has published numerous books and articles on political science, economics, and geography. His most recent work is on the pacifying effects of democratization.